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Health Economics Prelim - 1/19/2025

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Question 1.

A.
Using the Rothchild-Stiglitz framework, describe the types of equilibria that can occur in

insurance markets where consumers have heterogeneous risk types, under different assumptions

about the insurer's knowledge of individuals' risk types.
Feel free to use graphical illustration or

mathematical exposition to help answer the question, but be sure to explain the intuition of your

answer in words.

Answer:

The Rothschild-Stiglitz framework provides an insightful analysis of equilibria in competitive

insurance markets characterized by heterogeneous risk types among consumers.

The equilibria in

such markets depend on the level of information available to insurers about individual risk types.

Here, I explore different assumptions about the insurer's knowledge of individuals' risk types

with an emphasis on imperfect information and their implications for market equilibrium.
There

are three scenarios: Perfect Information, Imperfect Information and Asymmetric Information

with Partial Knowledge.

1. Perfect Information

Assumption: Insurers have perfect knowledge of each individual's risk type.

Equilibrium: In this scenario, insurers can perfectly price discriminate, offering contracts

tailored precisely to each individual's risk level.
Assuming the insurance market is perfectly

competitive, the price insurance company offers equals the marginal cost to insure each

consumer respectively.

Intuition: Perfect information eliminates adverse selection since premiums reflect true risk.

Each individual pays a premium that corresponds exactly to their risk level, leading to a

straightforward market equilibrium where insurers do not face unexpected payouts.

2. Imperfect Information

2.1 Pooling Equilibrium

Assumption: Insurers cannot distinguish between high-risk and low-risk individuals.

Equilibrium: Insurers offer a single contract to all individuals, resulting in a pooling

equilibrium.
However, this equilibrium is unstable due to adverse selection.

Intuition: The pooling equilibrium is unstable because high-risk individuals disproportionately

purchase insurance, resulting in increased payouts for insurers.
To compensate, insurers may

raise premiums, which can drive low-risk individuals out of the market, further exacerbating

adverse selection.

To illustrate the original work of the Rothchild-Stiglitz model, I will slightly modify the original

figures in their paper (1976) to explain the basic assumption of the model step by step and why

Pooling Equilibrium is not stable.

Unlike most economics and health economics diagrams, where x-axis represents quality of

insurance while y-axis represents price of insurance.
In the Rothschild-Stiglitz model, the X-axis

represents income in the state of the world without an accident, while the Y-axis represents

income in the state of the world with an accident.

The basic setup can be seen in Figure 1, where W_1 is income without accident and W_2 is

income with accident.
Imagine E is an insurance plan that an insurance company offers.
If a

consumer buys this insurance, his income without accident reduces to W_1O to W_1E because

he pays the premium.
Since he is insured, his income with accident will go up from W_2O to

W_2E.

Under the Rothschild-Stiglitz framework, the only eligible area for this discussion is the triangle

AOC, because following reasons:

1. Insurance companies will not pay consumers to buy insurance so anything right to the

W_1O is not feasible.

2. If someone buys insurance, the insurance company must compensate for the loss if someone gets into an accident, so anything below W_2O is not feasible.

3. Anything above 45 degree lines is not possible because if someone has more income on sick/injured days, someone would prefer being sick, this induces moral hazard.

Figure 1:

Now I will focus on discussing the area of AOC, assuming there are two types of consumers: low-risk and high-risk consumers.
In Figure 2, O is the original state in which consumers have no insurance.
The dashed line L and dashed line H represent a series of actuarially fair insurance policies for low-risk consumers and high-risk consumers, respectively.
These policies yield zero profit for insurance companies.
Notice that the actuarially fair line OL is much steeper; this is because low-risk consumers have a lower probability of getting into an accident, so an insurance company can afford to insure them with a small premium.
The bold line P represents the actuarially fair insurance policy for a pooling equilibrium, in which case insurance companies insure both high-risk and low-risk people.

Figure 2:

Curves H_u and L_u represent indifference curves.
The flatter indifference curves of low-risk individuals in the Rothschild-Stiglitz model reflect their lower willingness to trade off wealth between the no-accident and accident states due to their lower probability of loss.
Conversely, the steeper indifference curves of high-risk individuals reflect their higher willingness to trade

off wealth between these states due to their higher probability of loss.
This difference in the

shape of the indifference curves is crucial for understanding the equilibrium in competitive

insurance markets with heterogeneous risk types.

Now, assume point alpha is the pooling equilibrium.
However, there is an alternative insurance

policy beta.
The point beta is still profitable for the insurance company for attracting low-risk

people as it is on the left side of dash line OL.
The essence of this model is that beta attracts

low-risk people because, at this point, their indifference curve is outward.
However, for high-risk

people, an indifference curve that crosses beta is actually inward from H_u, so high-risk people

will not choose this point.
In fact, not only is beta a competing policy, but the entire shaded area

in Figure 2 also represents possible competing health policies that are better than alpha.

Therefore, any policy in these areas will be better than a pooling equilibrium.

2.1 Separating Equilibrium

Assumption: Insurers use self-selection mechanisms to indirectly determine individuals' risk

types.
Moreover, the low risk population is small enough relative to the whole population.

Equilibrium: Insurers design contracts that induce self-selection, where different risk types

choose different contracts.
This results in a separating equilibrium.

Intuition: Separating equilibria are stable because they ensure that individuals reveal their risk

types through their contract choices.

Insurers can price the contracts appropriately based on the

revealed risk levels.
This reduces the adverse selection problem but may lead to some

inefficiencies, such as partial insurance coverage for low-risk individuals.
In layman's terms,

because consumers reveal their types, now insurance companies gain a lot of information to

design possible health insurance policies.

Figure 3

Figure 3 illustrates the existence of a separating equilibrium, conditional on the low-risk

population being small enough relative to the entire population.
With the same setup as in Figure

2, let us assume the insurance company offers high-risk individuals a full insurance policy,

denoted as alpha_H It is considered full insurance because it lies on the 45-degree line.
The

curve H_u represents the utility curve that intersects alpha_H

Now, the insurance company offers low-risk individuals an insurance policy alpha_L, which is

slightly below H_u but just above the original no-insurance state O.
This policy is designed to

deter high-risk individuals because it is less favorable than alpha_H.

The stability of alpha_L depends on the proportion of high-risk individuals in the market.

Imagine we have an actuarially fair insurance policy line, denoted as pooling equilibrium p_1.

There exists a policy beta_1 that will attract both high-risk and low-risk individuals, as beta_1

lies outward from both the indifference curves L_u and H_u.
Consequently, there would be no

separating equilibrium, as any policy between L_u and P_1 could potentially serve as a

contender for a pooling equilibrium.

However, if the number of high-risk individuals is sufficiently large such that the actuarially fair

insurance policy for the pooling equilibrium lies at P_2, then the insurance company cannot

afford beta_1 because it is above p_2.
Any policy below p_2 or, more precisely, below L_u is

worse than alpha_L.
Therefore, in this scenario, a separating equilibrium is possible.

3. Asymmetric Information with Partial Knowledge

Assumption

Insurers have partial knowledge about individuals' risk types.
This knowledge could include

signals such as:

● Demographic Information: Age, gender, occupation, etc., which may correlate with

risk.

● Prior Claims History: Information about past claims can indicate future risk behavior.

Equilibrium

The nature of the equilibriums whether pooling or separatings depends on how effectively

insurers can use these signals to distinguish between different risk types.

3.1 Weak Signals: Pooling Equilibrium

When the signals are weak or not very informative, insurers struggle to differentiate effectively

between high-risk and low-risk individuals.
As a result, they may end up offering a single

contract to all individuals, leading to a pooling equilibrium.

Intuition: With weak signals, insurers cannot effectively separate high-risk from low-risk

individuals.
They offer a contract that partially adjusts for the average risk but does not fully

mitigate adverse selection.
High-risk individuals are more likely to buy the insurance, leading to

a higher overall risk pool than initially anticipated.

3.2 Strong Signals: Separating Equilibrium

When the signals are strong and reliably indicate risk types, insurers can design contracts that

induce self-selection, leading to a separating equilibrium.

Intuition: Strong signals enable insurers to better estimate individual risk and offer contracts

that high-risk and low-risk individuals will self-select into.
This reduces adverse selection by

ensuring that each group pays premiums that accurately reflect their risk level.
The separating

equilibrium is more stable and efficient as it aligns premiums with the true risk.

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B.
Suppose an insurer adopted a managed care technique like prior authorization to control

utilization.
How would that sort of technique get incorporated into the Rothchild-Stiglitz

framework, and why?

Answer:

B.1

To incorporate managed care techniques like prior authorization into the Rothschild-Stiglitz

framework, the model must be adjusted to reflect how these techniques influence the behavior of

both insurers and insured individuals.

1. Insurance Contract Design:

° Traditional Contracts: In the original Rothschild-Stiglitz model, insurance contracts are defined by the level of coverage (alpha) and the premium charged. High-risk individuals typically prefer contracts with more coverage, while low-risk individuals opt for less coverage to avoid high premiums.

° Managed Care Contracts: With prior authorization, contracts are not solely defined by coverage and premiums but also by utilization controls. This means that a contract includes clauses that specify the need for prior authorization for certain services.

2. Behavioral Adjustments:

° Insured Behavior: Managed care techniques alter the behavior of insured individuals by imposing additional steps before certain services are approved. This reduces the likelihood of unnecessary services being used, addressing moral hazard by aligning the insured's incentives with cost-effective care.

° Selection of Contracts: The presence of prior authorization can make certain contracts less attractive to high-risk individuals who anticipate needing more frequent and diverse medical services. As a result, high-risk individuals might be more likely to select contracts with fewer utilization controls but higher premiums, while low-risk individuals might opt for contracts with prior authorization due to lower premiums. This creates conditions to make a separating

equilibrium more plausible.

3. Equilibrium Adjustments:

° Separating Equilibrium: In the original framework, separating equilibria are achieved by designing contracts that deter high-risk individuals from choosing low-risk contracts.
With prior authorization, insurers can offer a contract with lower premiums and prior authorization requirements that is less attractive to high-risk individuals who require more extensive care.

° Pooling Equilibrium: A pooling equilibrium occurs when all individuals, regardless of their risk type, choose the same insurance contract.
Introducing managed care techniques like prior authorization affects the stability and feasibility of this equilibrium.

● Attraction of Low-Risk Individuals: Contracts with prior authorization and lower premiums may attract low-risk individuals, who anticipate needing fewer medical services.

● Repulsion of High-Risk Individuals: High-risk individuals, who expect to need more services, may be repelled by the utilization controls and opt for contracts without such restrictions.

This divergence in preferences can destabilize a pooling equilibrium.

B.2

Why Incorporate Managed Care Techniques?

1. Mitigating Moral Hazard: Prior authorization helps mitigate moral hazard by ensuring

that medical services are used appropriately and only when necessary. This aligns the

insured's incentives with cost-effective care, reducing the overutilization of services.

2. Addressing Adverse Selection: By incorporating prior authorization, insurers can design

contracts that better differentiate between high-risk and low-risk individuals. High-risk

individuals, who expect to need more services, are less likely to choose contracts with

stringent utilization controls, thereby helping to sort individuals based on their risk levels.

3. Cost Control: Managed care techniques help control the overall costs of providing

insurance by preventing excessive and unnecessary medical expenditures. This cost

control is crucial for maintaining affordable premiums and ensuring the sustainability of

the insurance market.

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C. A regulator can take a number of actions to help reduce adverse selection. Discuss one

example of such a regulatory action. Describe how that action intends to reduce adverse

selection, the strengths and weakness of that action with respect to reducing adverse selection,

and any empirical evidence on the effects of that sort of action.

Answer:

I will take the health insurance mandate as an example.

1. Description and Intention

An individual mandate, such as the one implemented in Massachusetts and later in the Affordable Care Act (ACA), requires individuals to purchase health insurance or pay a penalty. The primary intention behind this regulatory action is to reduce adverse selection in the insurance market.
Adverse selection occurs when individuals with higher health risks are more likely to purchase insurance, leading to higher premiums and potentially driving out healthier individuals from the insurance pool, further exacerbating the problem.
The mandate aims to bring healthier individuals into the insurance pool, thereby balancing the risk and lowering average costs (Hackmann, Kolstad, & Kowalski, 2015).

2. Strengths and Weaknesses

Strengths:

● Reduction in Adverse Selection: The mandate effectively lowers the average cost of insurance by increasing the proportion of healthy individuals in the insurance pool.
The Massachusetts individual mandate led to a significant decrease in premiums and average costs, indicating that healthier individuals were entering the insurance pool.

● Increased Coverage: The implementation of the individual mandate in Massachusetts significantly increased insurance coverage.
The study (Hackmann et al., 2015) found that enrollment in the individual market increased by 26.5 percentage points, demonstrating the effectiveness of the mandate in expanding coverage.

● Welfare Gains: The mandate resulted in welfare gains due to the reduction in adverse selection.
The study estimated an annual welfare gain of 4.1 percent per person or $51.1

million annually in Massachusetts (Hackmann et al., 2015).

Weaknesses:

● Compliance and Enforcement Issues: Ensuring that individuals comply with the

mandate can be challenging.
The penalty may not be sufficiently high to compel all

individuals to purchase insurance.

● Equity Concerns: The mandate might disproportionately affect lower-income

individuals who might find it financially burdensome to purchase insurance, even with

subsidies.

● Political and Public Resistance: Mandates can be politically contentious and may face

significant public opposition.
The Massachusetts mandate faced legal challenges, and

similar opposition was observed with the ACA's individual mandate.

3. Empirical Evidence

The empirical evidence from Massachusetts provides a detailed analysis of the effects of the

individual mandate.
Hackmann, Kolstad, and Kowalski (2015) estimated the impact of the

mandate using data from Massachusetts.
They found that the mandate led to a significant

decrease in premiums and average costs, indicating a reduction in adverse selection.
Specifically,

the premiums and average costs decreased by 23.3 percent and 8.7 percent, respectively, relative

to Massachusetts' pre-reform levels (Hackmann et al., 2015).
The study also estimated an annual

welfare gain of 4.1 percent per person or $51.1 million annually due to the reduction in adverse

selection.

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Question 3.

There are many market failures in health care and health insurance.

A.
Identify three market failures that lead to large costs in terms of economic inefficiency.
In two

or three paragraphs for each, explain the nature of the market failure.
Your answer should make

the case that the welfare costs of market failure are high, using both theoretical arguments and

empirical evidence.

Answer:

A.

1. Three market failures that are most discussed in health economics are adverse selection,

moral hazard and monopoly.

Economic inefficiency occurs when resources are not used in a way that maximizes the

potential output or welfare.

It represents a situation where goods and services are not distributed

or produced optimally, leading to a loss of potential economic value or social welfare.
In other

words, economic efficiency relates to Pareto efficiency and Productive efficiency.

1.1 Adverse selection

In the presence of adverse selection, Pareto efficiency is compromised because the market does

not achieve the optimal allocation of resources.
Specifically:

1. Suboptimal Insurance Coverage: Low-risk individuals, who value insurance at a lower

premium, drop out of the market because the premiums are set too high to cover the

high-risk individuals.
As a result, these low-risk individuals remain uninsured, which is

suboptimal from a welfare perspective.

2. Market Exclusion: When adverse selection drives premiums up, it excludes some

individuals who would otherwise benefit from insurance, leading to a scenario where

improving one party's welfare (by providing insurance to low-risk individuals) would

require redistributing the risk and potentially making high-risk individuals worse off.

One could also argue that adverse selection leads to loss of productivity efficiency,

because it increases administrative cost because insurers may need to invest more in

underwriting and screening processes to better assess and price individual risk.

Theoretical arguments suggest that adverse selection leads to inefficiency because insurance

markets fail to pool risk effectively, leading to underinsurance or complete market breakdowns.

According to the seminal work by Rothschild and Stiglitz (1976), in competitive insurance

markets with asymmetric information, separating equilibria can arise where different risk types

are offered different contracts.
However, these equilibria are often inefficient as they do not

achieve risk pooling, resulting in welfare losses.

Abundant empirical evidence shows adverse selection leads to large costs in terms of economic

inefficiency.
Brown, Duggan, Kuziemko, and Woolston (2014) highlight the adverse selection

issues in Medicare Advantage, showing that actual costs conditional on the risk score of those

joining Medicare Advantage fell substantially after 2003, relative to those remaining in

traditional Medicare.
We can see retrospectively that adverse selection indeed caused large

efficiency loss, that is why after addrssing adverse selection, costs fell.

1.2 Moral Hazard

Moral hazard can lead to a loss of economic efficiency, impacting both Pareto efficiency and

productive efficiency.

First, Moral hazard leads to a loss of Pareto efficiency because of following reasons:

1. Overconsumption of Healthcare Services: Insured individuals may consume more

healthcare services than necessary because the insurance covers a significant portion of

the cost.
This overconsumption leads to an allocation of resources that is not optimal, as

the marginal benefit of the additional healthcare services consumed is less than the

marginal cost of providing them.

2. Resource Misallocation: The increased demand for healthcare services due to moral

hazard can lead to a misallocation of resources within the healthcare system.
Resources

that could be used more efficiently elsewhere are instead used to provide services of marginal benefit to the insured individuals.

Second, Moral hazard leads to a loss of Productive efficiency because of following reasons:

1. Increased Healthcare Costs: The overutilization of healthcare services due to moral hazard increases the overall cost of healthcare provision.

2. Inefficient Use of Resources: Moral hazard can result in the inefficient use of healthcare resources.

Theoretical models, such as those developed by Pauly (1968), illustrate how moral hazard leads to overconsumption of healthcare services, deviating from the socially optimal level of care. The model posits that when individuals are fully insured, the marginal cost of consuming healthcare services is zero, leading to a higher quantity demanded than what would be optimal if they were paying out-of-pocket.
Empirical evidence corroborates these theoretical predictions. The RAND Health Insurance Experiment found that individuals with more generous insurance coverage consumed significantly more healthcare services without corresponding improvements in health outcomes, indicating inefficient overuse of healthcare resources (Aron-Dine, Einav, and Finkelstein, 2013).
However, it should be noted that the debate about the impact of RAND HIE is still ongoing, and there might be long-term health benefits. If there is an improvement in long-term health benefit, we should not view it as an example of moral hazard.

1.3 Monopoly

Market concentration or monopoly can also lead to both Pareto efficiency and productive

efficiency.

First, loss of Pareto Efficiency:

1. Higher Prices for Healthcare Services: Providers with significant market power can charge higher prices for healthcare services than they would in a competitive market.

2. Reduced Access to Care: Higher prices can also lead to reduced access to healthcare for some individuals, especially those with lower incomes or inadequate insurance coverage. This reduced access results in a misallocation of resources, as some individuals forego necessary care due to cost, while others may receive more than they need.

Second, loss of Productive Efficiency:

1. Higher Production Costs: When providers have market power, they may face less pressure to operate efficiently.
Without competitive pressure, there is less incentive to minimize costs, leading to higher production costs for healthcare services.

2. Reduced Innovation: In a competitive market, providers have incentives to innovate and improve their services to attract more patients.
Market power can reduce these incentives, leading to less innovation and slower improvements in the quality and efficiency of healthcare services.

Classic microeconomic theory such as monopolistic competition or duopoly indicate that increased market concentration among healthcare providers can lead to monopolistic behavior, resulting in prices that exceed the marginal cost of service provision.
This pricing power distorts the market, reducing the overall welfare by decreasing consumer surplus and increasing the

deadweight loss.
Empirical evidence supports the high welfare costs associated with provider

market power.

Empirical evidence supports the high welfare costs associated with provider market power.

Studies have shown that hospital mergers often result in significant price increases without

corresponding improvements in the quality of care.
For example, research by Dafny, Ho, and Lee

(2019) found that hospital consolidations led to significant price increases.
Specifically, hospitals

that gain system members within the same state but in different local markets experience a price

increase of 7-10 percent relative to control hospitals.
In summary, an increase in price deters

people going to hospital more frequently, leading to allocation efficiency.

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B.
Select one of the market failures.
What public policies would effectively address this market

failure?
As in part (a), cite existing evidence to argue that the policy would be effective at

improving economic efficiency.
Please note that you may not “re-use” the answer to Question 1,

Part C in this answer (i.e., you must select different examples of public policies).

Answer:

B.

I select adverse selection as a market failure to be discussed here.

To address adverse selection, one effective public policy is the implementation of risk adjustment in health insurance markets. Risk adjustment involves transferring funds from insurers with relatively healthier enrollees to those with sicker enrollees, thereby reducing the incentives for insurers to select against high-risk individuals. This policy aims to level the playing field by compensating insurers for taking on higher-risk populations, thus promoting economic efficiency.

Geruso, Layton, McCormack, and Shepard (2021) provides a detailed analysis of risk adjustment and its impacts on adverse selection across both the extensive (whether to buy insurance) and intensive (which plan to buy) margins. The paper highlights the following points regarding risk adjustment:

Reduction of Intensive Margin Adverse Selection: Risk adjustment transfers help to balance the costs between more generous and less generous plans. By compensating insurers for enrolling higher-cost individuals, these transfers reduce the incentive for insurers to design plans that attract only healthier individuals. This, in turn, mitigates the issue of plan choice being driven by health status, which can stabilize the market for more generous plans.

Interactions with Extensive Margin: The study shows that while risk adjustment primarily targets the intensive margin by reducing selection within the market, it also indirectly impacts the extensive margin. For instance, stronger risk adjustment can lower the premiums for more generous plans, making them more attractive to healthier individuals and potentially reducing the

uninsurance rate.
However, there are trade-offs, as seen in their simulations where stronger risk

adjustment sometimes led to increased premiums for less generous plans, which could affect

overall market participation.

Empirical Evidence from Massachusetts: Using data from the Massachusetts health insurance

exchange, the authors simulate different policy scenarios and find that risk adjustment has

significant impacts on equilibrium prices and enrollment.
Stronger risk adjustment reduces the

premiums for more generous plans, leading to higher enrollment in these plans and a more

balanced distribution of health risks across plans.

In conclusion, Risk adjustment transfers are an effective public policy tool for addressing

adverse selection in health insurance markets.
By redistributing funds based on the risk profiles

of enrollees, risk adjustment mitigates the financial incentives for insurers to select healthier

individuals and encourages a more balanced risk pool.
This policy improves economic efficiency

by stabilizing premiums and promoting competition based on plan quality and efficiency rather

than risk selection.
The empirical evidence from the Massachusetts health insurance market

supports the effectiveness of risk adjustment in achieving these goals, demonstrating its potential

to enhance overall welfare in regulated health insurance markets.

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Question 4.

"Global capitation" has emerged as a model of health care payment in recent years, where

primary care organizations (for example, Oak Street Health and ChenMed) receive prospective

risk-adjusted per-patient monthly payments, primarily from private Medicare Advantage plans.

In return, the primary care organizations are financially responsible for all health care used by patients choosing to receive care from the organization (including hospital or emergency department care).

a. How do you predict that global capitation would affect the quantity of services provided to patients by primary care physicians relative to fee-for-service reimbursement? Under what circumstances would the level of services in global capitation fall below what is socially optimal for patient health?

Answer:

I predict a drop in the quantity of service provided to patients under global capitation relative to fee-for-service (FFS) reimbursement. This is because global capitation changes the incentive structure for primary care physicians compared to FFS. Under FFS, physicians are paid for each service provided, incentivizing higher volumes of services, which can lead to overutilization and increased healthcare costs. In contrast, global capitation provides a fixed, risk-adjusted payment per patient, incentivizing cost-efficiency and preventive care. Health providers would not benefit from unnecessary medical services.

However, under global capitation, the quantity of services might fall below socially optimal levels if providers excessively limit care to reduce costs. This could occur if the capitation payments are not adequately adjusted for patient risk, leading to under-provision of necessary services.

Inadequate risk adjustment could incentivize providers to "cherry-pick" healthier patients or avoid high-cost patients, thereby compromising care quality for those with greater healthcare needs.

Circumstances Leading to Suboptimal Service Levels

1. Insufficient Risk Adjustment: If the risk adjustment formula fails to accurately predict healthcare needs, providers may receive inadequate compensation for high-risk patients, leading to under-provision of services.

2. Incentives for Cost Minimization: Providers under capitation might focus excessively on reducing costs, potentially at the expense of necessary care.
This could result in patients not receiving timely or appropriate treatments, adversely affecting health outcomes.

3. Market Pressures: Intense competition among providers under capitation could drive some to cut corners on care quality to remain financially viable, further exacerbating the risk of under-provision.

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b.
Discuss two potential problems that could arise from unconstrained competition between primary care organizations under global capitation.
What are regulations that could prevent these problems?

Answer:

I believe two most common problems from unconstrained competition between primary care

organizations under global capitation are Risk Selection and Under-Provision of Care.

1.1 Risk Selection (Cream Skimming):

Under unconstrained competition, primary care organizations (PCOs) may engage in risk

selection, also known as "cream skimming."
This occurs when PCOs selectively enroll healthier

patients who are less likely to require expensive healthcare services.
By focusing on lower-risk

individuals, these organizations can maximize their profits, as the fixed per-patient payments will

likely exceed the cost of care for these patients.
Conversely, sicker patients, who need more

intensive and costly care, may find it difficult to enroll in these plans, leading to disparities in

access to care and potential adverse health outcomes for higher-risk populations.

Regulations to Prevent Risk Selection:

1.2 Risk Adjustment Mechanisms: Implementing robust risk adjustment mechanisms can

ensure that payments to PCOs reflect the health status and expected costs of their patient

populations.
By adjusting payments based on the severity of patients' conditions, organizations

have less incentive to avoid enrolling sicker patients.

Benefits:

● Equitable Compensation: By adjusting payments to account for the expected costs of

care for sicker patients, PCOs are more likely to receive fair compensation for taking on

higher-risk individuals.

● Reduced Incentives for Cream Skimming: Accurate risk adjustment diminishes the

financial incentive for PCOs to selectively enroll healthier patients.

This promotes a more

inclusive healthcare system where patients receive care based on need rather than their

ability to attract lower-cost care.

Challenges and Solutions:

● Data Accuracy: Ensuring accurate and comprehensive data collection is crucial for

effective risk adjustment.
This can be achieved through standardized reporting systems

and electronic health records.

● Complexity: Risk adjustment models can become complex, requiring sophisticated

statistical methods and computational resources.
Investing in robust healthcare IT

infrastructure and analytical capabilities can address this complexity.

1.3 Minimum Care Requirements: Establishing minimum care requirements and

standards can prevent PCOs from underserving high-risk patients.
These requirements can

include mandatory coverage of essential health services and quality benchmarks that PCOs must

meet.

Benefits:

● Standardized Care Quality: By mandating a baseline level of care, these regulations

ensure that all patients receive a minimum standard of healthcare, reducing disparities in

treatment.

● Patient Protection: High-risk patients are protected from potential neglect or

under-provision of services, as PCOs are legally obligated to meet the prescribed care

standards.

Challenges and Solutions:

● Enforcement: Effective enforcement of minimum care requirements requires a robust regulatory framework and sufficient resources for monitoring and compliance. Strengthening regulatory bodies and providing adequate funding can address this issue.

● Flexibility: While minimum care standards are necessary, it is also important to allow some flexibility to accommodate the unique needs of different patient populations and innovations in care delivery.
Regulators can periodically review and update the standards to reflect best practices and emerging evidence in healthcare.

1.4 Under-Provision of Care:

Another potential issue with unconstrained competition under global capitation is the under-provision of care.
Since PCOs receive a fixed payment per patient, there is a financial incentive to minimize the quantity of services provided to increase profitability.
This can lead to inadequate care, where patients do not receive the necessary medical interventions, follow-ups, or preventive services.
Over time, under-provision of care can result in worsening health outcomes and higher long-term healthcare costs due to the progression of untreated conditions.

Regulations to Prevent Risk Selection:

1.5 Quality Monitoring and Reporting

Purpose and Function: Quality monitoring and reporting systems are essential to ensure that Primary Care Organizations (PCOs) provide a minimum standard of care, despite the cost-cutting incentives inherent in global capitation.

These systems focus on continuous assessment and

transparency to uphold care standards.

Implementation:

● Regular Audits: Conducting regular audits by independent bodies can verify that PCOs

are meeting established care standards.
These audits can assess various aspects of care,

such as adherence to clinical guidelines, patient outcomes, and overall care quality.

● Patient Satisfaction Surveys: Gathering feedback directly from patients through regular

surveys helps measure patient satisfaction and experience.
High levels of patient

satisfaction typically correlate with better care quality and patient outcomes.

● Outcome Measures: Tracking specific outcome measures, such as rates of hospital

readmissions, control of chronic conditions, and preventive care utilization, provides

concrete data on the effectiveness of the care provided.
These measures can be

aggregated and analyzed to identify trends and areas needing improvement.

Benefits:

● Accountability: Regular monitoring and reporting hold PCOs accountable for the care

they provide.
Knowing that their performance is being scrutinized can motivate PCOs to

maintain high standards.

● Continuous Improvement: Data collected through these systems can be used to identify

areas for improvement and implement evidence-based interventions to enhance care

quality.

● Transparency: Publicly reporting the performance of PCOs can help patients make informed decisions about where to receive care, fostering a competitive environment where quality is a key differentiator.

Challenges and Solutions:

● Data Integrity: Ensuring the accuracy and reliability of data collected for quality monitoring is critical.
Implementing standardized data collection procedures and utilizing advanced health information technology can enhance data integrity.

● Resource Intensive: Quality monitoring and reporting require significant resources. Investing in healthcare IT infrastructure and training personnel can mitigate this challenge.

Conclusion

In summary, unconstrained competition under global capitation can lead to significant issues such as risk selection and under-provision of care.
To mitigate these problems, appropriate regulations and mechanisms, such as risk adjustment, minimum care requirements, quality monitoring, and performance-based incentives, are necessary.
These regulations can help ensure that PCOs provide equitable, high-quality care to all patients, regardless of their health status, while maintaining the cost-efficiency benefits of the global capitation model.

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c. A hypothetical empirical analysis compared health service use among Medicare beneficiaries enrolled in global capitation compared to Medicare beneficiaries whose primary care providers

received fee-for-service payment, controlling for observed patient health status.
The analysis

found lower overall health service use for global capitation patients and the authors concluded

that global capitation reduced health care costs.
Do you agree with this conclusion?

Answer:

I do not agree with this conclusion for the following reasons:

1. Selection Bias: Selection bias is a critical factor to consider.
If healthier patients are more

likely to enroll in global capitation plans, the observed reduction in health service use

may not be due to the payment model itself but rather the inherent lower healthcare needs

of these patients.
Conversely, sicker patients might avoid global capitation plans if they

perceive potential under-provision of necessary services, further skewing the results.

Robust methods, such as propensity score matching or instrumental variables, should be

used to address this bias.

2. Unobserved confounders: Patient preferences, socioeconomic factors or other factors,

might still bias the results if not adequately controlled.

3. Underutilization of Necessary Services: Lower health service use might indicate

underutilization of necessary services, which could lead to poorer health outcomes and

higher long-term costs.
If patients are not receiving appropriate preventive care, chronic

disease management, or timely interventions, their conditions might worsen, leading to

more severe and costly health episodes in the future.

4. Adverse Health Outcomes: Reductions in health service use without corresponding improvements in health outcomes could imply that patients are foregoing essential care. This could result in increased morbidity and mortality, which are not immediately reflected in short-term cost savings but may lead to higher costs over time.

5. Administrative Costs: The implementation of global capitation requires robust administrative systems to manage payments, monitor care quality, and coordinate services.
These administrative costs can be substantial and might offset the savings from reduced health service use.

6. Care Coordination Expenses: Effective care coordination under global capitation can involve significant resources, such as hiring care managers, investing in health information technology, and implementing new care processes.
These expenses may not be captured in the analysis focused solely on health service use.

Reference:

Cabral, M., Geruso, M., & Mahoney, N. (2018).
"Do Larger Health Insurance Subsidies Benefit Patients or Producers?
Evidence from Medicare Advantage."
American Economic Review,
108(8): 2048-2087.

FAQs

What is GPTZero?

GPTZero is the leading AI detector for checking whether a document was written by a large language model such as ChatGPT. GPTZero detects AI on sentence, paragraph, and document level. Our model was trained on a large, diverse corpus of human-written and AI-generated text, with a focus on English prose. To date, GPTZero has served over 2.5 million users around the world, and works with over 100 organizations in education, hiring, publishing, legal, and more.

When should I use GPTZero?

Our users have seen the use of AI-generated text proliferate into education, certification, hiring and recruitment, social writing platforms, disinformation, and beyond. We've created GPTZero as a tool to highlight the possible use of AI in writing text. In particular, we focus on classifying AI use in prose. Overall, our classifier is intended to be used to flag situations in which a conversation can be started (for example, between educators and students) to drive further inquiry and spread awareness of the risks of using AI in written work.

Does GPTZero only detect ChatGPT outputs?

No, GPTZero works robustly across a range of AI language models, including but not limited to ChatGPT, GPT-4, GPT-3, GPT-2, LLaMA, and AI services based on those models.

What are the limitations of the classifier?

The nature of AI-generated content is changing constantly. As such, these results should not be used to punish students. We recommend educators to use our behind-the-scene Writing Reports as part of a holistic assessment of student work. There always exist edge cases with both instances where AI is classified as human, and human is classified as AI. Instead, we recommend educators take approaches that give students the opportunity to demonstrate their understanding in a controlled environment and craft assignments that cannot be solved with AI. Our classifier is not trained to identify AI-generated text after it has been heavily modified after generation (although we estimate this is a minority of the uses for AI-generation at the moment). Currently, our classifier can sometimes flag other machine-generated or highly procedural text as AI-generated, and as such, should be used on more descriptive portions of text.

I'm an educator who has found AI-generated text by my students. What do I do?

Firstly, at GPTZero, we don't believe that any AI detector is perfect. There always exist edge cases with both instances where AI is classified as human, and human is classified as AI. Nonetheless, we recommend that educators can do the following when they get a positive detection: Ask students to demonstrate their understanding in a controlled environment, whether that is through an in-person assessment, or through an editor that can track their edit history (for instance, using our Writing Reports through Google Docs). Check out our list of several recommendations on types of assignments that are difficult to solve with AI.

Ask the student if they can produce artifacts of their writing process, whether it is drafts, revision histories, or brainstorming notes. For example, if the editor they used to write the text has an edit history (such as Google Docs), and it was typed out with several edits over a reasonable period of time, it is likely the student work is authentic. You can use GPTZero's Writing Reports to replay the student's writing process, and view signals that indicate the authenticity of the work.

See if there is a history of AI-generated text in the student's work. We recommend looking for a long-term pattern of AI use, as opposed to a single instance, in order to determine whether the student is using AI.